Preventing Occupational Low-Back Pain

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THE COMPLEX COMPENSATION and disability issues surrounding occupational low-back pain require the maximal use of preventive strategies by occupational medicine practitioners.

The primary prevention of occupational low-back pain involves the following techniques to prevent an injury from occurring:

Training and education efforts have typically been directed toward workers, management, and practitioners who treat occupational low-back pain. Worker training has usually focused on proper work methods and procedures, especially safe lifting techniques. The *Work Practices Guide for Manual Lifting,*[1] published by the National Institute of Occupational Safety and Health, sets forth an objective approach to quantify safe versus unsafe lifting tasks. Variables such as an object's weight, the horizontal distance of the object from the body, the vertical travel distance, and the frequency and duration of lifting are formulated into a numerical "action limit" below which manual lifting would be considered safe for virtually all men and 75% of women. Defined as three times the action limit, the maximal permissible limit is the value above which only 25% of men and virtually no women could be expected to safely lift. Engineering controls are recommended for lifting tasks above this limit. Between the action limit and the maximal permissible limit, administrative or engineering controls are advised to reduce the risk of an overexertion injury. Typical administrative controls might include worker selection criteria, strength and fitness testing, worker training, or rotation schedules to reduce lifting times. Typical engineering controls could include container design and weight, human/container coupling design such as the use of handles, worker-floor coupling design, hoists, conveyors, or robotic devices.

Strength and fitness training has been recommended as a method to reduce or prevent the occurrence of occupational low-back pain. Although there are conflicting data about the effectiveness of strength and fitness training, it appears that the positive evidence outweighs the negative. Physical fitness and aerobic conditioning should be considered as personal health assets in preventing back injuries.

Ergonomically designing a job to match a worker's ability represents a significant strategy in the primary prevention of work-related low-back pain. Redesigning jobs to reduce or eliminate the amount of manual handling has been advocated by ergonomists to reduce the work-related incidence of low-back pain. The *Work Practices Guide for Manual Lifting* and a computerized two-dimensional strength-prediction model developed by the University of Michigan have both been useful in identifying and redesigning high-risk manual handling activities.

Reducing excessive bending, twisting, reaching, heavy loads, prolonged sitting, vibration, and falling through improved job design are additional prevention roles of occupational health and safety practitioners.[2]

Worker selection techniques include an accurate medical history to document preexisting episodes of lost workdays from back pain or back operations. Isometric strength tests that match a worker's strength to job lifting tasks have been promoted as an effective administration tool to prevent occupational low-back pain from manual handling activities.[3] Routine x-ray films of the lumbar spine have not been helpful in predicting future episodes of low-back pain. The small yield cannot be justified in terms of excess cost or unnecessary radiation exposure.

Back schools represent a comprehensive approach to preventive back care. The original concept was to educate patients who were either suffering or had suffered from acute back pain. Recent evidence suggests that back schools are not effective in the primary prevention of occupational low-back pain.

Secondary prevention strategies, by definition, are designed to reduce or prevent complications due to long-term disability after an injury has occurred. Poor recovery results are associated with adversarial management situations, litigation over compensation, hospital admissions, and a lack of follow-up and concern. Early intervention by management, physicians, and insurance adjusters has been shown to be highly successful in reducing complications due to occupational low-back pain.

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